FIGURE 1A

Amino Acid Sequences 12.12

12.12 Light chain:

leader:MALPAQLLGLLMLWVSGSSG
variable:
DIVMTQSPLSLTVTPGEPASISCRSSQSLLYSNGYNYLDWYLQKPGQSPQVLISLGSNR
ASGVPDRFSGSGSGTDFTLKISRVEAEDVGVYYCMQARQTPFTFGPGTKVDIR
constant:
RTVAAPSVFIFPPSDEQLKSGTASVVCLLNNFYPREAKVQWKVDNALQSGNSQESVTEQ
DSKDSTYSLSSTLTLSKADYEKHKVYACEVTHQGLSSPVTKSFNRGEC*

FIGURE 1B

12.12 Heavy chain:

leader:MEFGLSWVFLVAILRGVQC
variable:
QVQLVESGGGVVQPGRSLRLSCAASGFTFSSYGMHWVRQAPGRGLEWVAVISYEESNRY
HADSVKGRFTISRDNSKITLYLQMNSLRTEDTAVYYCARDGGIAAPGPDYWGQGTLVTV
SS
constant:
ASTKGPSVFPLAPASKSTSGGTAALGCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQS
SGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKRVEPKSCDKTHTCPPCPAPELL
GGPSVFLFPPKPKDTLMISRTPEVTCVVVDVSHEDPEVKFNWYVDGVEVHNAKTKPREE
QYNSTYRVVSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPP
SREEMTKNQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTTPPVLDSDGSFFLYSKLTV
DKSRWQQGNVFSCSVMHEALHNHYTQKSLSLSPGK*
or

alternative constant region:
ASTKGPSVFPLAPSSKSTSGGTAALGCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQS
SGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKRVEPKSCDKTHTCPPCPAPELL
GGPSVFLFPPKPKDTLMISRTPEVTCVVVDVSHEDPEVKFNWYVDGVEVHNAKTKPREE
QYNSTYRVVSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPP
SREEMTKNQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTTPPVLDSDGSFFLYSKLTV
DKSRWQQGNVFSCSVMHEALHNHYTQKSLSLSPGK*

FIGURE 2A

DNA sequence of Light chain of 12.12

5'atgggcgctccctgctcagctcctggggctgctaatgctctgggtctctggatccagtgggggatattgtgatgactcagtctccac
tctccctgaccgtcacccctggagagccggcctccatctcctgcaggtccagtcagtgcctcctgtatagtaatggatacaactat
ttggattggtacctgcagaagccagggcagtctccacaggtcctgatctctttgggttctaatcgggcctccggggtccctgacag
gttcagtggcagtggatcaggcacagattttacactgaaaatcagcagagtggaggctgaggatgttggggtttattactgcatgc
aagctcgacaaactccattcactttcggccctgggaccaaagtggatatcagacgaactgtggctgcaccatctgtcttcatcttcc
cgccatctgatgagcagttgaaatctggaactgcctctgttgtgtgcctgctgaataacttctatcccagagaggccaaagtacagt
ggaaggtggataacgccctccaatcgggtaactcccaggagagtgtcacagagcaggacagcaaggacagcacctacagcc
tcagcagcaccctgacgctgagcaaagcagactacgagaaacacaaagtctacgcctgcgaagtcacccatcaggcctgag
ctcgcccgtcacaaagagcttcaacaggggagagtgttag3'

FIGURE 2B

DNA sequence of Heavy chain of 12.12 (including introns)

5'atggagtttgggctgagctggttttccttgttgctattttaagaggtgtccagtgtcaggtgcagttggtggagtctgggggag
gcgtggtccagcctgggaggtccctgagactctcctgtgcagcctctggattcaccttcagtagctatggcatgcactgggtccg
ccaggctccaggcaaggggctggagtgggtggcagttatatcatatgaggaaagtaatagataccatgcagactccgtgaagg
gccgattcaccatctccagagacaattccaagatcacgctgtatctgcaaatgaacagcctcagaactgaggacacggctgtgta
ttactgtgcgagagatggggtatagcagcacctgggcctgactactggggccagggaaccctggtcaccgtctcctcagcaa
gtaccaagggcccatcggtcttccccctggcgccctgctcagcaagagcacctctgggggcacagcggccctgggctgcctggt
caaggactacttccccgaaccggtgacggtgtcgtggaactcaggcgccctgaccagcggcgtgcacaccttcccggctgtcc
tacagtcctcaggactctactccctcagcagcgtggtgaccgtgccctccagcagcttgggcacccagacctacatctgcaacgt
gaatcacaagcccagcaacaccaaggtggacaagagagttggtgagaggccagcacaggggaggaggggtgtctgctgga
gccaggctcagcgctcctgcctggacgcatcccggctatgcagtcccagtccagggcagcaaggcaggccccgtctgcctctt
cacccggaggcctctgcccgccccactcatgctcagggagagggtcttctgggttttccccaggctctgggcaggcacaggct
aggtgcccctaacccaggccctgcacacaaagggggcaggtgctggggctcagacctgccaagagccatatccggtgggaccc
tgccccctgacctaagcccaccccanagtcccaanctctccactccctcagctcggacaccttctctcctcccagattccagtaactc
ccaatcttctctctgcagagcccaaatcttgtgacaaactcaacacatgcccaccgtgcccaggtaagccagcccaggcctcgc
cctccagctcaaggcggggacaggtgccctagagtagcctgcatccagggacaggcccccngccggggtgtgacacgtccacct
ccatctcttcctcagcacctgaactcctgggggggacggtcagtcttcctcttccccccaaaacccaaggacacacctcatgatctcc
cggacccctgaggtcacatgcgtggtggtggacgtgagccacgaagaccctgaggtcaagttcaactggtacgtggacggcg
tggaggtgcataatgccaagacaaagccgcgggaggagcagtacaacagcacgtaccgtgtggtcagcgtcctcaccgtcct
gcaccaggactggctgaatggcaaggagtacaagtgcaaggtctccaacaaagccctcccagcccccatcgagaaaaccatc
tccaaagccaaagggcagccccgtggaggtgcgagggcacaatggacagaggccggctcggcccaccctctgccctgagagt
gaccgcgtgtaccaacctctgtccctacagggcagccccgagaaccacaggtgtacaccctgcccccatcccgggaggagatg
accaagaaccaggtcagcctgacctgcctggtcaaaggcttctatcccagcgacatcgccgtggagtgggagagcaatgggc
agccggagaacaactacaagaccacgcctcccgtgctggactccgacggctccttcttcctctatagcaagctcaccgtggaca
agagcaggtggcagcaggggaacgtcttctcatgctccgtgatgcatgaggctctgcacaaccactacacgcagaagagcctc
tccctgtctccgggtaaatga3'

FIGURE 3A

Amino Acid Sequence for 5.9
5.9 Light chain:

leader:MALLAQLLGLLMLWVPGSSG
variable:
AIVMTQPPLSSPVTLGQPASISCRSSQSLVHSDGNTYLNWLQQRPGQPPRLLIYKFFRR
LSGVPDRFSGSGAGTDFTLKISRVEAEDVGVYYCMQVTQFPHTFGQGTRLEIK
constant:RTVAAPSVFIFPPSDEQLKSGTASVVCLLNNFYPREAKVQWKVDNALQSG
NSQESVTEQDSKDSTYSLSSTLTLSKADYEKHKVYACEVTHQGLSSPVTKSFNRGEC*

FIGURE 3B

5.9 Heavy chain:

leader:MGSTAILALLLAVLQGVCA
variable:EVQLVQSGAEVKKPGESLKISCKGSGYSFTSYWIGWVRQMPGKGLEWMGI
IYPGDSDTRYSPSFQGQVTISADKSISTAYLQWSSLKASDTAMYYCARGTAAGRDYYYY
YGMDVWGQGTTVTVSS

constant region:
ASTKGPSVFPLAPASKSTSGGTAALGCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQS
SGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKRVEPKSCDKTHTCPPCPAPELL
GGPSVFLFPPKPKDTLMISRTPEVTCVVVDVSHEDPEVKFNWYVDGVEVHNAKTKPREE
QYNSTYRVVSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPP
SREEMTKNQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTTPPVLDSDGSFFLYSKLTV
DKSRWQQGNVFSCSVMHEALHNHYTQKSLSLSPGK*

or alternative constant region:

ASTKGPSVFPLAPSSKSTSGGTAALGCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQS
SGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKRVEPKSCDKTHTCPPCPAPELL
GGPSVFLFPPKPKDTLMISRTPEVTCVVVDVSHEDPEVKFNWYVDGVEVHNAKTKPREE
QYNSTYRVVSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPP
SREEMTKNQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTTPPVLDSDGSFFLYSKLTV
DKSRWQQGNVFSCSVMHEALHNHYTQKSLSLSPGK

FIGURE 4A

Coding sequence for short isoform of human CD40:

```
  1 atggttcgtc tgcctctgca gtgcgtcctc tggggctgcl tgctgacggc tgtccatcca
 61 gaaccaccca ctgcatgcag agaaaaacag tacctaataa acagtcagtg ctgttclttg
121 tgccagccag gacagaaact ggtgagtgac tgcacagagt tcactgaaac ggaatgcctt
181 ccttgcggtg aaagcgaatt cctagacacc tggaacagag agacacactg ccaccagcac
241 aaatactgcg acccaacct agggcttcgg gtccagcaga agggcacctc agaaacagac
301 accatctgca cctgtgaaga aggctggcac tgtacgagtg aggcctgtga gagctgtgtc
361 ctgcaccgct catgctgcc cggctttggg gtcaagcaga ttgctacagg ggtttctgat
421 accatctgcg agccctgccc agtcggcttc ttctccaatg tgtcatctgc tttcgaaaaa
481 tgtcaccctt ggacaaggtc cccaggatcg gctgagagcc ctggtggtga tccccatcat
541 cttcgggatc ctgtttgcca tcctcttggt gctggtcttt atcaaaaagg tggccaagaa
601 gccaaccaat aa
```

FIGURE 4B

Encoded short isoform of human CD40:

```
  1 mvrlplqcvl wgclllavhp eppacrekq ylinsqccsl cqpgqklvsd clefteteci
 61 pcgesefldt wnrethchqh kycdpnlglr vqqkglselld tlcecegwh ctsececesv
121 lhrscspgfg vkqlatgvsd tlcepcpvgf fsnvssafek chpwtrspgs aespggdphh
181 lrdpvchplg aglyqkggqe anq
```

FIGURE 4C

Coding sequence for long isoform of human CD40:

```
  1 atggttggtc tgcctctgca gtgcgtcctc tggggctgct tgctgaccgc tgtccatcca
 61 gaaccaccca ctgcatgcag agaaaaacag tacctaataa acagtcagtg ctgttctttg
121 tgccagccag gacagaaact ggtgagtgac tgcacagagt tcactgaaac ggaatgcctt
181 ccttgcgggt aaagcgaatt cctagacacc tggaacagag agacacactg ccaccagcac
241 aaatactgcg accccaacct agggcttcgg gtccagcaga agggcaccctc agaaacagac
301 accatctgca cctgtgaaga aggctggcac tgtacgagtg aggcctgtga gagctgtgtc
361 ctgcaccgct catgctcgcc cggccttggg gtcaagcaga ttgctacagg ggttatgat
421 accatctgcg agcctgccc agtcggcttc ttctccaatg tgtcatctgc tttgaaaaa
481 tgtcaccctt ggacaagctg tgagaccaaa gaacttggttg tgcaacaggc aggcacaaac
541 aagactgatg ttgtctgtgg tccccaggat cggctgagag ccctggtggt gatccccatc
601 atcttcggga tcctgttgc catcctcttg gtgctggtct ttataaaaaa ggtggccaag
661 aagccaacca ataaggcccc ccacccaaag caggaacccc aggagatcaa tttccctgac
721 gatcttcctg gctccaacac tgctgctcca gtgcaggaga cttacatgg atgccaaccg
781 gtcacccagg aggatggcaa agagagtgc atctcagtgc aggagagaca gtga
```

FIGURE 4D

Encoded long isoform of human CD40:

```
  1 mvrlplqcvl wgclltavhp epplacrekq yllnsqcosl cqpgqklvsd cteftetecl
 61 pcgeseflda wnrethchqh kycdpniglr vqqkglsetd tlctceegwh ctseaoesov
121 lhrscspgfg vkqlatgvad tlcepopvgf fsnvssafck chpwtscetk dlvvqqagtn
181 ktdvvcgpqd rlralvvipl ifgllfalll vlvflkkvak kptnkaphpk qepqelnfpd
241 dlpgsntaap vqetlhgcqp vtqedgkesr lsvqerq
```
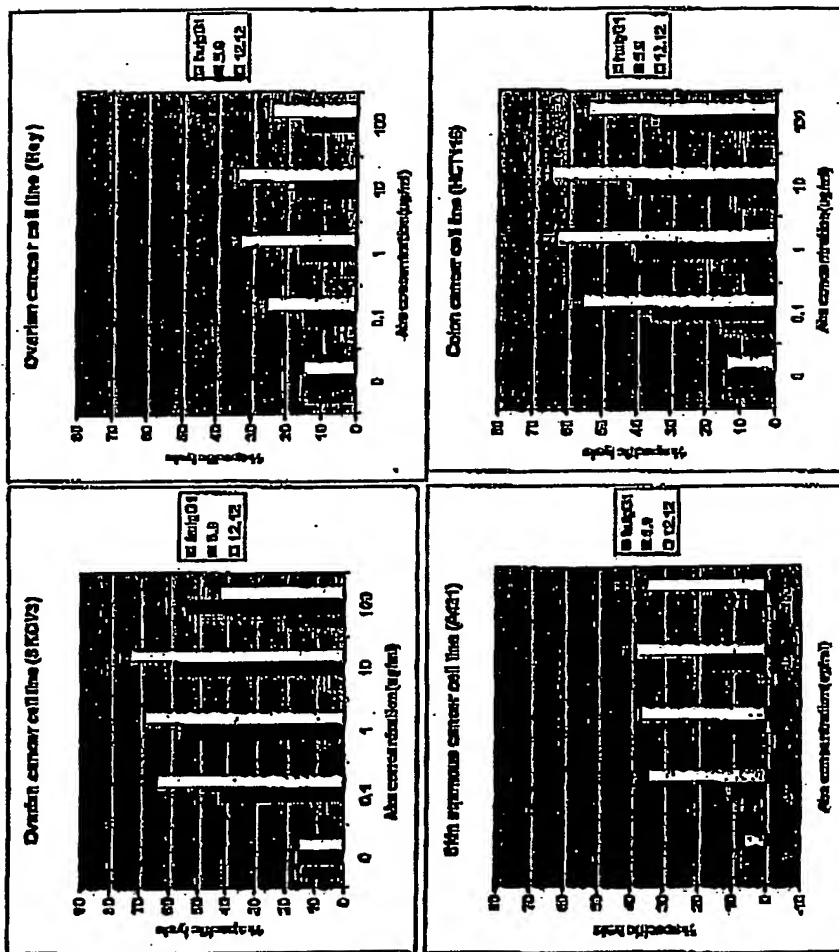
FIGURE 5B
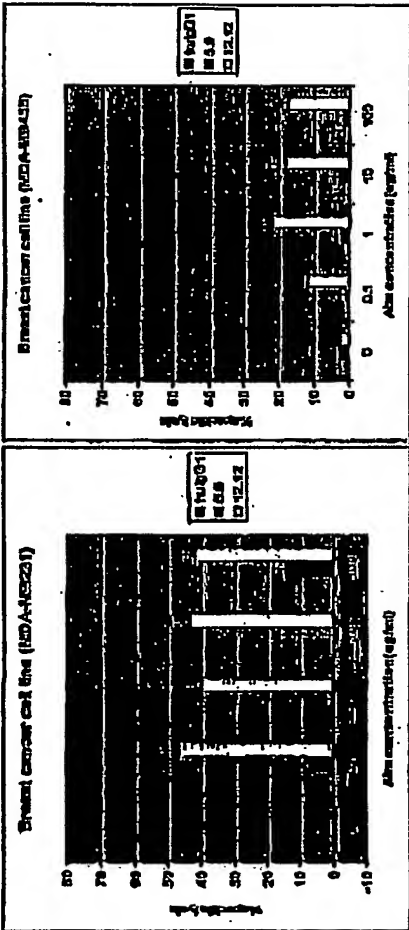
FIGURE 5A

FIGURE 5D

FIGURE 5C

FIGURE 6B
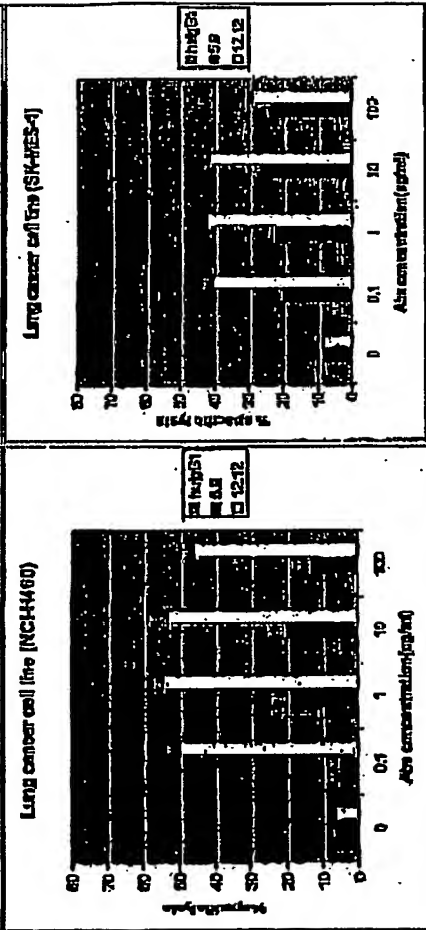
FIGURE 6A
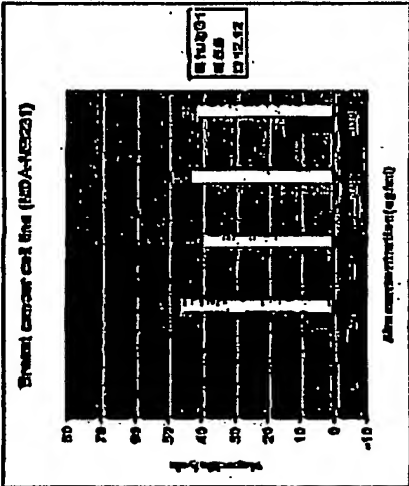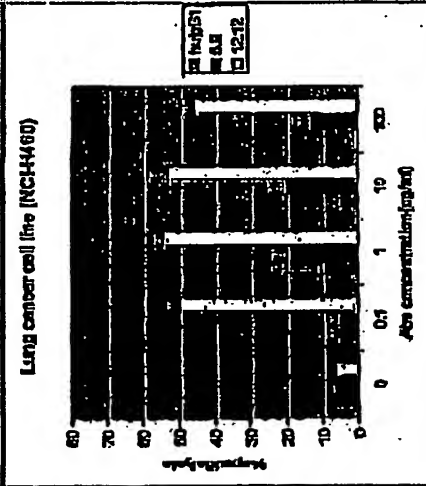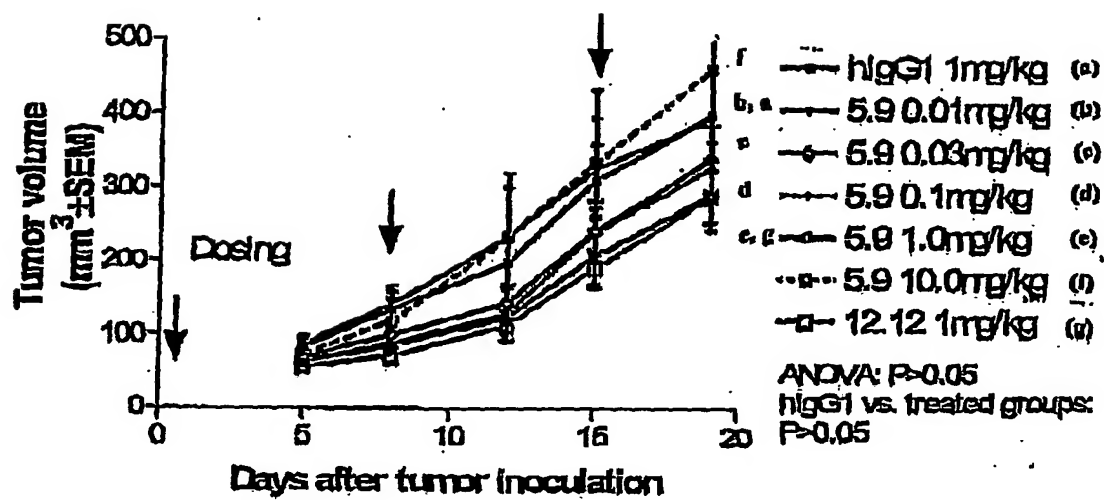
FIGURE 6D

FIGURE 6C

FIGURE 7

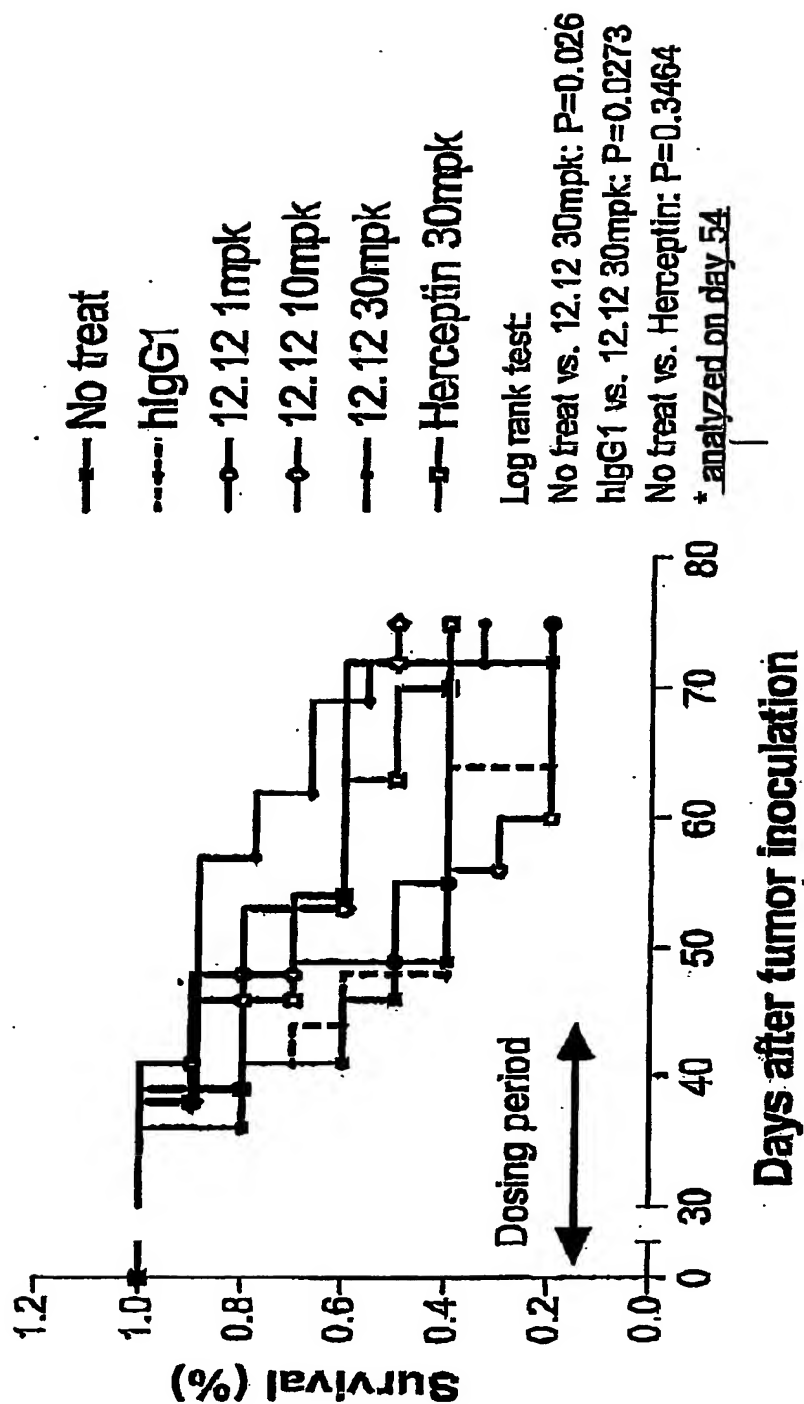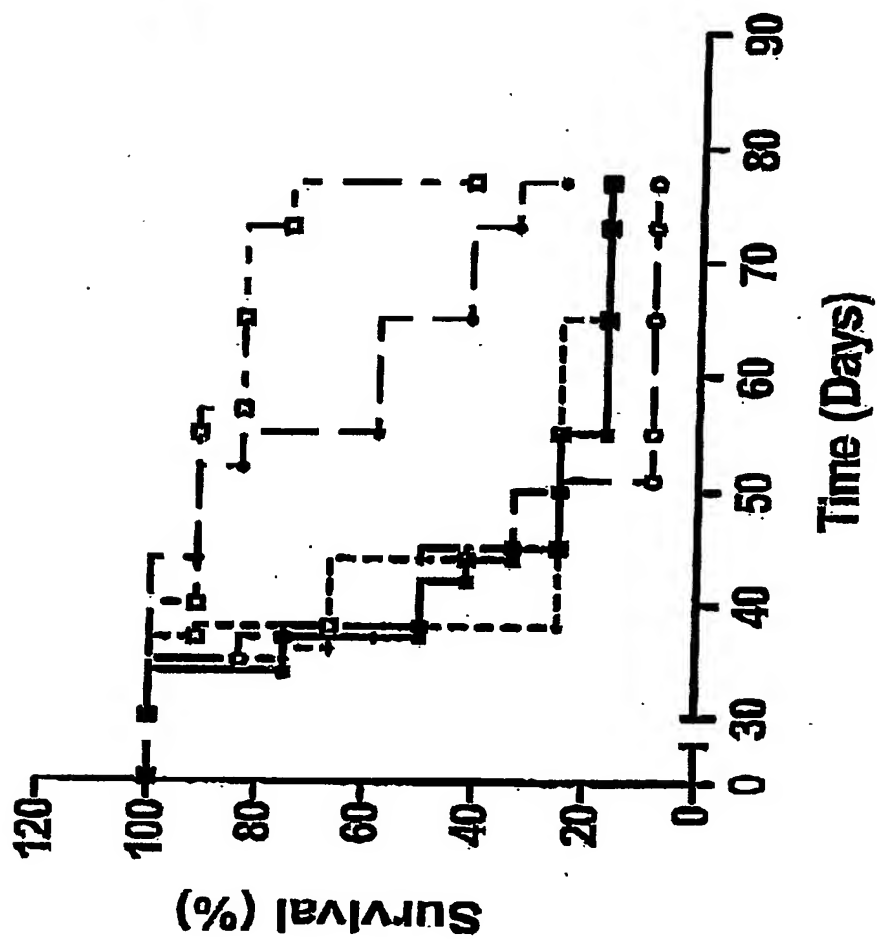**FIGURE 8**

FIGURE 9

*analyzed by ANOVA on day-77
No Treatment vs IgG1: p= > 0.05
IgG1 vs 12.12 i.v. & i.p.: p= > 0.05
IgG1 vs Herceptin, i.p.: p= 0.0032
IgG1 vs Herceptin, i.v.: p= 0.0005

— No Treatment
—□— IgG1 Control
—○— 12.12, 30 mpk, i.p.
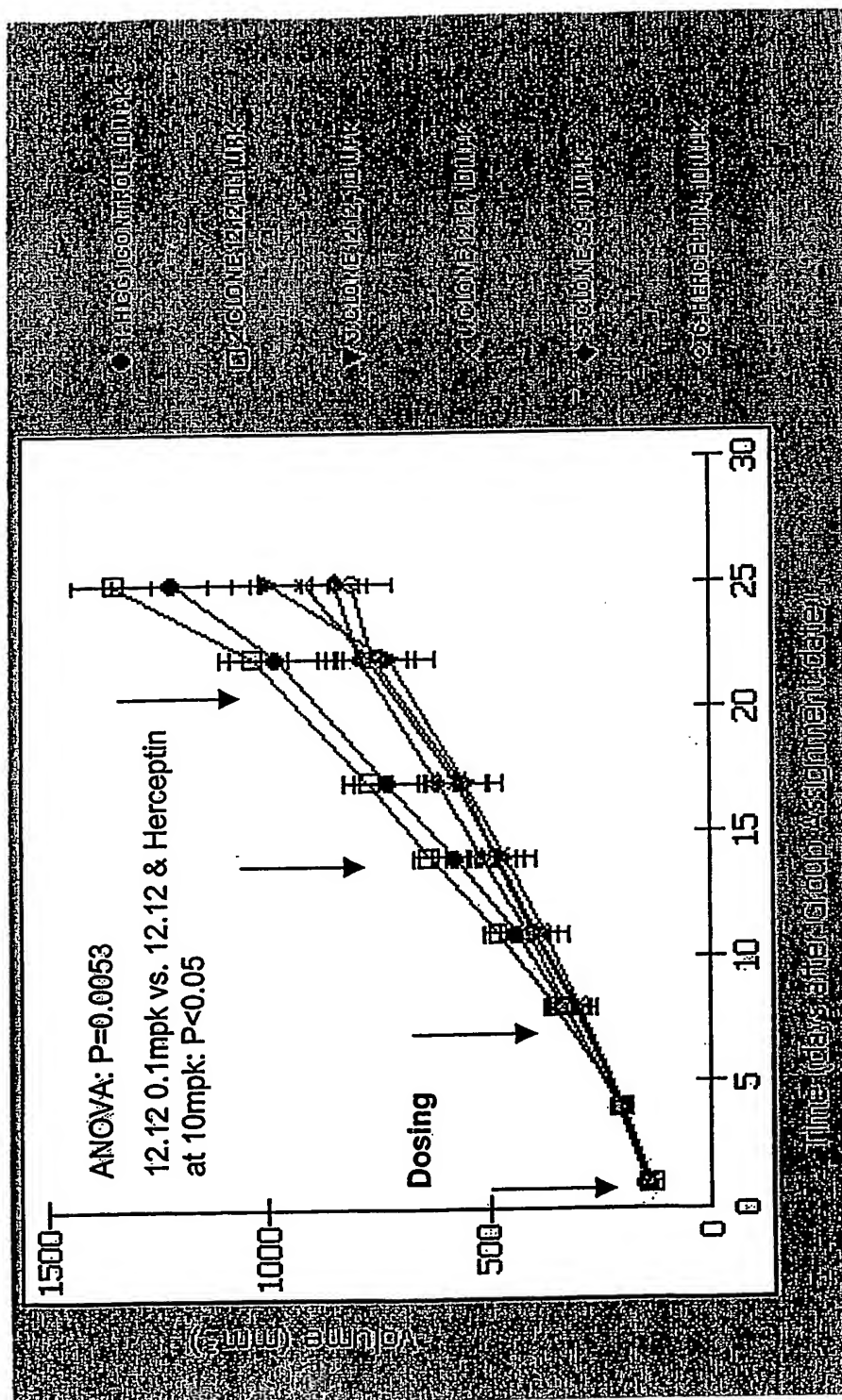···○··· 12.12, 30 mpk, i.v.
—■— Herceptin, i.p.
···□··· Herceptin, i.v.

dosing: days 1, 8, 15, 22

FIGURE 10

FIGURE 11